

**TECHNICAL MEMORANDUM
for
SA7 CONTAMINATED SOIL
REMOVAL OPERATIONS**

**Portage Creek Area Removal
Kalamazoo, Michigan**

Prepared for:

USEPA Region 5
Emergency Response Branch
77 West Jackson
Chicago, IL 60604

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CONTENTS

<u>Section</u>	<u>Page</u>
Figures.....	iii
Tables	iii
1 Introduction.....	1-1
2 Project Preparation.....	2-1
Limb and Brush Removal Support for Pre-Survey SA6 and SA7.....	2-1
Resource Procurement	2-1
Pre-excavation Sampling of Data Gap Areas SA6 and SA7	2-1
Sampling	2-1
Analyses.....	2-2
Mobilization and Site Preparation	2-2
Site Security	2-2
Command Post and Support Area.....	2-3
Facilities and Utilities	2-3
Equipment and Material Storage	2-5
Dewatering and Staging Pad Construction	2-5
Waste Water Treatment Plant Construction	2-8
Dewatering Pipeline Construction to Area SA6	2-9
3 Sa7 Contaminated Soil Removal	3-1
Waste Characterization Sampling of TSCA/Subtitle D Soil	3-1
Clearing and Grubbing of Access Road and Excavation Area	3-3
Access Road Construction	3-3
Environmental and Site Controls.....	3-4
Excavation of TSCA-Contaminated Soil.....	3-7
Excavation of Subtitle D Contaminated Soil	3-8
T&D of TSCA-Contaminated Soil	3-9
T&D of Sub D Contaminated Soil.....	3-9
Post-Excavation Sampling.....	3-10
Post-Excavation Survey	3-10
Backfill of Contaminated Soil Removal Area	3-11
Removal of Site Facilities/Controls	3-11
Re-Vegetation Planting.....	3-11
Re-Vegetation Monitoring.....	3-12
Removal of Environmental Controls	3-12



FIGURES

<u>No.</u>		<u>Page</u>
1	Site Location	1-2
2	Sediment Removal Areas.....	1-3
3	Detailed Layout of the Site	2-4
4	Staging Pad Construction Details	2-7
5	SA7 Site Plan	3-2

TABLES

<u>No.</u>		<u>Page</u>
1	Excavation Details	3-1



1. INTRODUCTION

Environmental Quality Management, Inc. (EQ) has been tasked with performing a time-critical-removal action (TCRA) to remove polychlorinated biphenyl (PCB) contaminated sediments from targeted locations over a 1.8-mile section of Portage Creek. The Portage Creek Area Site (Site) is a portion of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site. This Site located in Kalamazoo County, Michigan, is pervasively contaminated with PCBs as a result of historic waste practices associated with several paper mills. The Site was listed on the National Priorities List (NPL) on August 30, 1990. The Portage Creek Site is located in the City of Kalamazoo, Michigan, beginning at East Cork Street and extending northward approximately 3 miles to the confluence of the Kalamazoo River. Activities associated with this removal action are anticipated to occur in segments along a 1.8-mile stretch of Portage Creek. Work activities will move downstream primarily between Reed Avenue to East Walnut Street bridge, South Pitcher Street bridge to the railroad crossing west of Rochester Street, and the bend in Portage Creek east of Rochester Street to the confluence with the Kalamazoo River (Figure 1, Site Location Map).

A comprehensive description of the project is provided in the Work Plan for the Portage Creek Area Time-Critical Removal Action. The section of Portage Creek targeted for action has been divided into 10 distinct removal areas (Figure 2, Sediment Removal Areas). The areas targeted for removal will be referred to as SA1-A, SA1-B, SA1-C, SA3-A, SA5-A, SA5-C, Axtell Creek, SA5-D, SA6, and SA7. This Technical memorandum will focus on establishing support facilities and contaminated soil removal operations in the SA7 area.

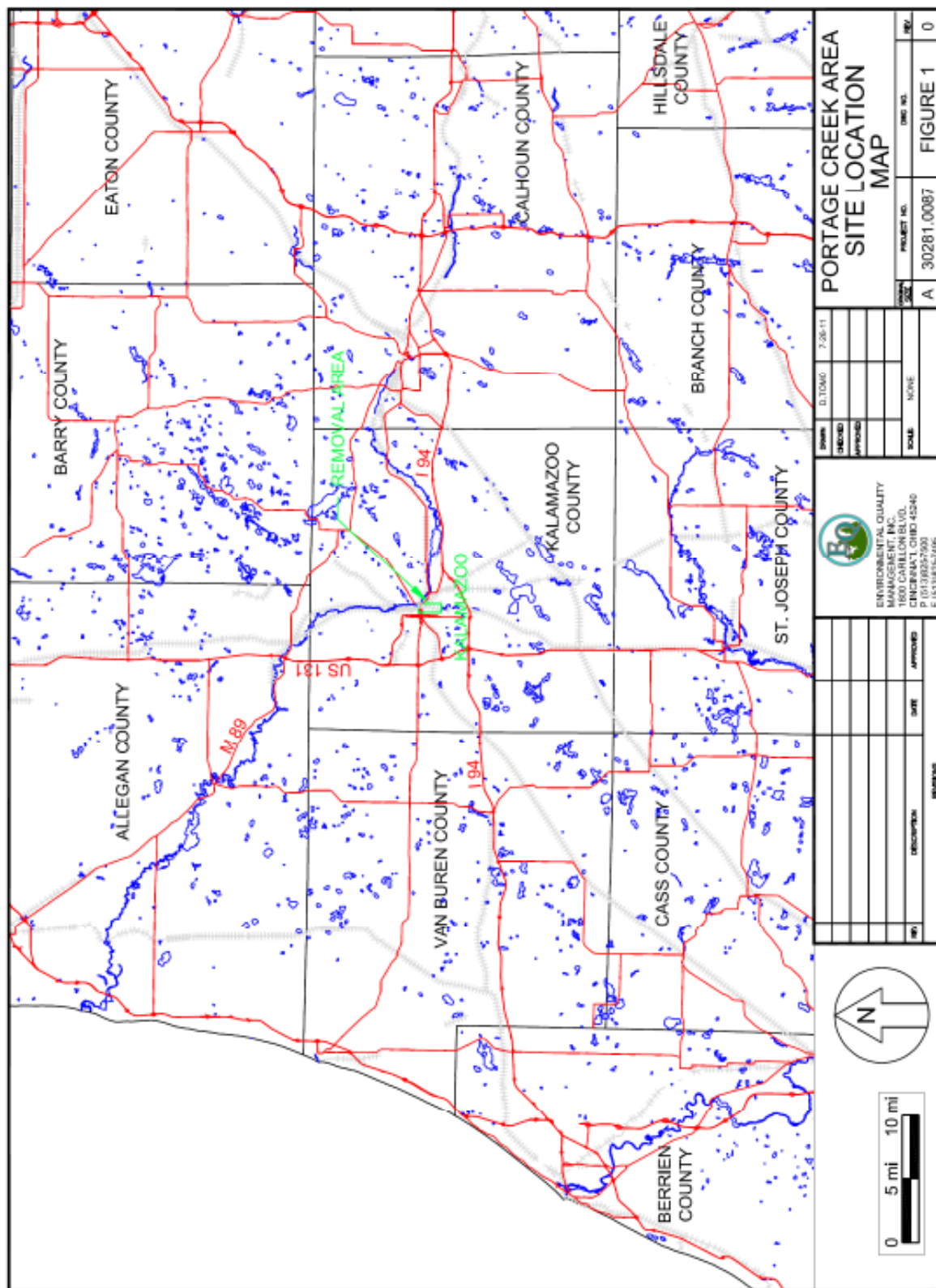




Figure 2. Sediment Removal Areas



2. PROJECT PREPARATION

EQ will perform the following activities to prepare the Portage Creek Area Site for contaminated soil excavation in SA7. EQ will also perform the preparation activities for SA6.

Limb and Brush Removal Support for Pre-Survey SA6 and SA7

EQ will provide a foreman and three laborers to remove limbs and brush to enable the USEPA FIELDS Group to acquire line-of-site access for survey instruments and to obtain preliminary elevation data to create design drawings for sediment removal in Areas SA6 and SA7. Crews will be equipped with hand saws, looping shears, and pole pruners. Crews will not be able to remove trees at the time of this work effort due to the lack of a formal access agreement. Crews will clear limbs and brush to open transect lines at SA6-1 through SA6-14 and SA7 to create line-of-sight access for survey instruments. This effort is expected to be completed in 6 to 8 workdays.

Resource Procurement

The EQ Response Manager (RM) will work with various support personnel to identify the type and quantity/duration of resources needed. The RM and EQ design engineers will work with the assigned Field Cost Administrator (FCA) to develop procurement specifications for resources not provided by EQ and/or team subcontractors. Resources not procured through EQ or its team subcontractors will be procured through a competitive bid process. Items to be procured will include, but are not limited to, waste water treatment system/materials, office trailers, sanitation facilities, erosion control materials, sheet piling, HDPE piping/fittings, and heavy and specialized equipment.

Pre-excavation Sampling of Data Gap Areas SA6 and SA7

Sampling

EQ will conduct sampling at dredging area SA6 and excavation area SA7 to further define the extent of contamination and to finalize the removal depths required. SA 6 grids that require pre-



dredging sampling are SA6-1, SA6-6, SA6-10, SA11, SA6-13, and SA6-14. Sampling efforts will be performed jointly with the USEPA START Contractor. EQ will supply sampling equipment and supplies. The START representative will be responsible for sample preparation and labeling, completing chain-of-custody, and packaging samples for shipment. Details regarding sampling, procedures, and protocols are presented in the Field Sampling Plan (FSP), and the Quality Assurance Protection Plan (QAPP). In addition, EQ will collect samples so that waste characterization analyses can be conducted as part of the process for securing disposal acceptance of the TSCA waste soils/sediments and Subtitle D waste soils/sediments.

Analyses

EQ will provide laboratory analyses of the collected samples. Details regarding sample analyses, turnaround time, and QA/QC levels are presented in the FSP and QAPP.

Mobilization and Site Preparation

EQ will begin mobilization (likely in September 2011) as soon as access agreements are obtained for the work areas and support areas. EQ will begin preparing the Site's command post and areas needed to support dredging operations at SA5, Axtell Creek, SA6, SA7, and the remaining areas of the Portage Creek Area Site. The command post and primary support area will be located on vacant land southeast of the intersection of E Crosstown Parkway and John Street. The property owner has used this property to store equipment, semi-trailers, and construction materials from operations at other facilities. The command post and support area property will be referred to as the John Street TCRA Support Area.

Site Security

EQ will provide Site security to monitor the John Street TCRA Support Area during non-working hours. A small office trailer will be provided to house the security officer at the entrance to the Area. Security guards will be uniformed and required to patrol the area and report incidents and break-ins to the RM.

Using fencing materials left on site by the property owner, EQ will install perimeter chain link fencing and access gates to enclose the John Street TCRA Support Area. EQ will procure a



fencing contractor to install the perimeter fence and to supplement the remaining fence construction materials. The perimeter fence will have two 16-ft-wide access gates along the west fence line for truck access onto and off site for transport of sediment waste. A passage gate will also be installed along the west perimeter fence to provide personnel and visitor access to the command post trailers. A third 16-ft-wide truck access gate will be installed along the east perimeter fence line to allow off-road truck and heavy equipment egress to/from the Portage/Axtell Creek area for sediment removal operations.

Command Post and Support Area

EQ will establish a command post and support area at the John Street TCRA Support Area. The Area will encompass 2.1 acres and will border the west side of Portage Creek. A detailed layout of the Site setup is provided as Figure 3. The support area will include a waste staging/dewatering pad with pug mill, waste water treatment plant, inter/intra site access roads, truck tire wash facility, fuel tank, and equipment/material storage laydown areas.

Facilities and Utilities

EQ will provide three office trailers (approximately 12-ft by 60-ft) for site management and support operations. One office trailer will house USEPA and the START contractor and be equipped with tables, chairs, and white boards for holding site meetings with site management and stakeholders. The second trailer will house EQ's site management team, oversight equipment, and supplies. The third trailer will be used as a crew break and support trailer. All three trailers will be provided with electric power, heat, and air conditioning. Phone and internet service will be provided to the USEPA and EQ site management trailers. EQ will initially supply the USEPA and EQ Site Management trailers with temporary electric power from a 50-kW generator rented by EQ. EQ will procure the services of a local electrician and arrange for power service hookup from Consumers Power Company to all three trailers. EQ site management will share space with the site crew until hard-line electric power is provided to all three trailers.

EQ will provide an additional office trailer with hard-line electric power for the site security guard(s) positioned near the site entrance.



Figure 3. Detailed Layout of the Site



EQ will provide sanitation, rubbish disposal, equipment storage containers, and water service in addition to providing electric, phone, and internet utilities. EQ will create additional gravel-covered parking/equipment /material laydown areas, an equipment fuel storage tank and fueling area, and decontamination pads.

Equipment and Material Storage

EQ will provide one or two 8-ft by 40-ft connex storage containers for storage of small operations equipment, tools, construction materials, and protective equipment/supplies.

Dewatering and Staging Pad Construction

EQ will construct a dewatering/material handling/staging pad that will be used for dewatering, sediment stabilization, and load-out for most of the targeted removal areas on the Portage Creek Site. The pad will be constructed to facilitate the following operations:

- Receipt of partially solidified sediment waste from over-the-road dump trucks from the SA6 removal area and the other areas for final dewatering/solidification and staging prior to shipment off Site for final disposition.
- Receipt of partially solidified sediment waste from off-road dump trucks from the SA5/Axtell Creek removal area(s) and other areas for final dewatering/solidification and staging prior to shipment off Site for final disposition.
- Dewatering of sediments staged on the pad with recovery of latent water in a collection reservoir built within the confinement of the pad to allow water to be collected for processing through the adjacent water treatment system.
- A tire wash station to facilitate truck tire cleaning for over-the-road dump trucks dumping on/or loading out material on the pad.
- The controlled application of solidification material to stabilize/dry sediments for over-the-road transport to the final disposal facility.



An example of the staging pad construction features is depicted in the photograph below:



**Photograph 1. Geocell installation over
liner and sand layer under drain**

The approximate overall dimensions of the pad will be 135-ft by 230-ft. The location of the pad at the John Street TCRA support area is depicted in Figure 3, and pad construction details are presented in Figure 4. The pad will consist of a 3-ft-tall perimeter berm, an HDPE/geotextile under-liner, a leachate collection reservoir, a sand under-drain layer, an HDPE Geocell/rock cover layer, and a semi-truck tire wash station. Once the pad is constructed, a pug mill will be placed on it for solidification processing of wet sediment. To meet facilitation requirements, the pad will be constructed with the following features:

- A collection reservoir with a storage capacity of 20,000 to 30,000 gallons will be excavated in the northeast corner of the pad area.
- The overall pad area will be graded to facilitate drainage to the collection reservoir area.
- A 3-ft-tall perimeter berm will be constructed with 1/3 slopes along the north, south, and west sides, except for where over-the-road trucks will enter and exit the pad along the western end. The berm slope in this location will have a 1/10 slope to allow safe truck egress/exit from the pad. The slope along a portion of the eastern side will also be constructed with a 1/10 slope to allow for safe access by off-road dump trucks onto the pad.
- A 2-ft deep by 2-ft wide anchor trench will be excavated outside the perimeter berm to anchor the geotextile underlayment and HDPE liner.
- An 8-ounce non-woven geotextile underlayment will be installed over the surface of the pad/reservoir area and the perimeter berm to be anchored in the trench located outside the perimeter berm.
- EQ will provide a subcontractor to provide and construct a 40-mil-thick HDPE liner with 8-inch welded overlapping seams over the pad/reservoir area and perimeter berm.

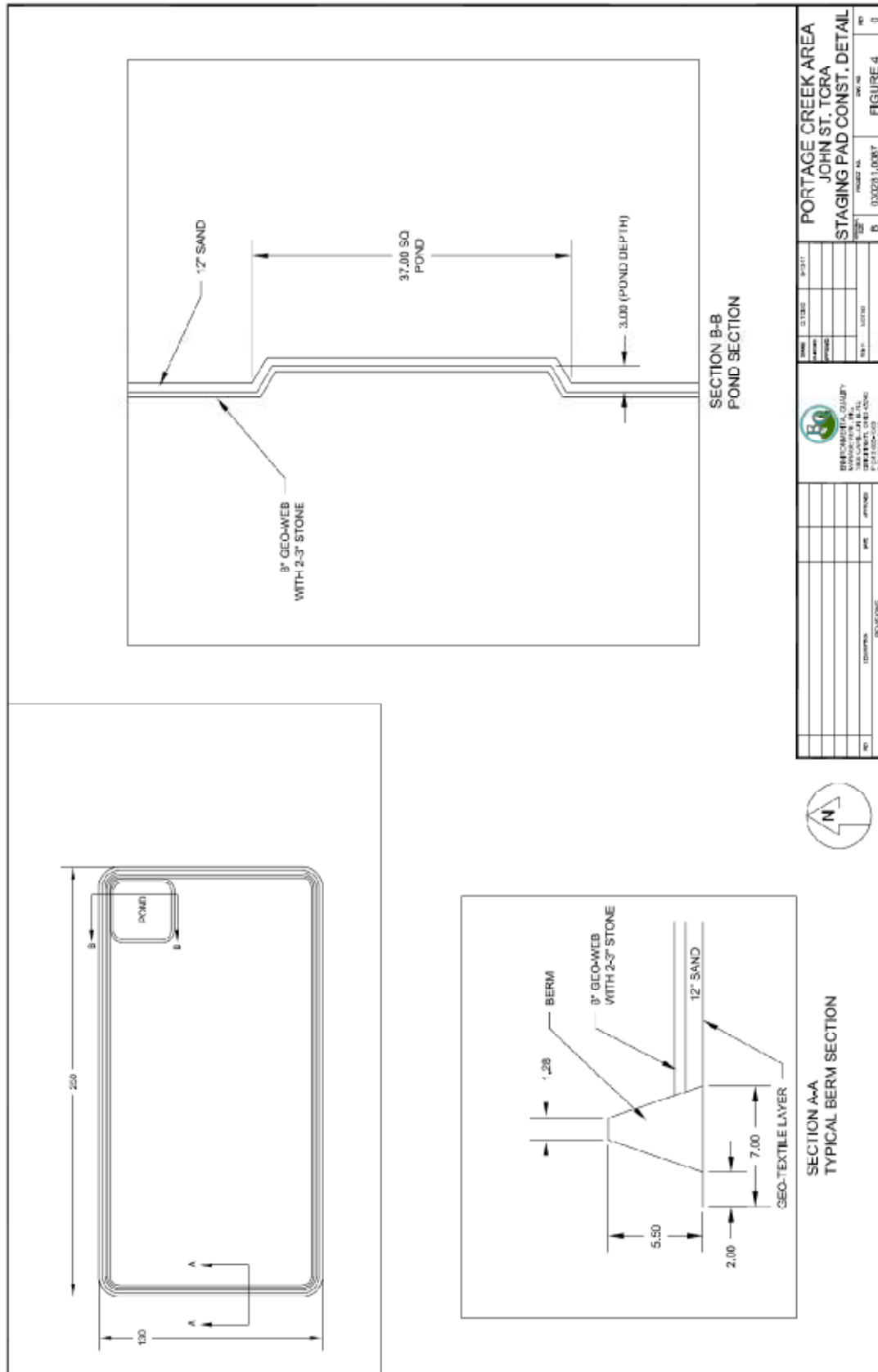


Figure 4. Staging Pad Construction Details



- EQ will anchor the HDPE liner and geotextile underlayment by backfilling the anchor trench with over-liner/geotextile materials.
- EQ will install a 1-ft-thick sand layer over the pad area, with the exception of the reservoir area, to serve as an under-drain for the pad to allow latent water released from staged sediments to accumulate in the collection reservoir. This will be accomplished using rubber-tracked low-ground-pressure heavy equipment to dump sand onto the pad. Sand will be brought in from the off-Site borrow and graded to the proper thickness. Prior to delivery, the sand material will be presampled and analyzed per requirements of the FSP/ QAPP/ Construction Quality Control Plan (CQCP). An excavator will load crawler carriers (rubber-tracked dump trucks) with sand for placement onto the pad. EQ will use a rubber-tracked skid steer loader and rubber-tracked mini-excavator to place and grade the material to proper thickness. A 6-inch HDPE geocell will be used to contain the sand along the perimeter of the collection reservoir. The geocell comes in 8-ft- by 20-ft-long blocks. The sidewalls of the geocell are perforated to allow water to flow through the sand-filled cell units while retaining the sand fill within the cell. The geocell will be laid in 1 block widths along the west and south sides of the collection reservoir. The lined perimeter berm will serve as the east and north outer walls of the collection reservoir. The first 6-inch layer of geocell will be filled sand deployed from the mini-excavator. A second layer of 6-inch geocell blocks will be installed over the first layer with offset seams, and the cells will be filled with sand.
- EQ will utilize a small vibratory smooth drum roller to compact the sand layer to provide a stable under-base for the loaded truck traffic.
- EQ will install an 8-inch layer of 2- to 3-inch stone in an 8-inch geocell over the sand layer to provide a final working surface for the staging pad. Prior to delivery, stone material will be presampled and analyzed per requirements of the FSP/QAPP/CQCP. An excavator will load crawler carriers with stone for transport onto the pad. EQ will use a rubber-tracked skid steer loader and rubber-tracked mini-excavator to place and fill the geocell to the proper thickness. The small smooth drum vibratory compactor will be used to settle the stone fill into the geocell. Additional stone will be brought onto the pad to fill the void areas where stone settled from passes by the vibratory roller.
- EQ will install an automated truck wash system in the northwest corner of the staging pad to decontaminate the tires of over-the-road trucks exiting the pad before they enter clean work zones and public roadways. Design and installation details are to-be-determined (TBD). Wash water from tire washing will be allowed to drain onto the pad and be collected in the reservoir via the sand layer under-drain.
- EQ will set up a pug mill on the staging pad at a location TBD and a horizontal silo for housing solidification media adjacent to the pad.

Waste Water Treatment Plant Construction

EQ will construct a waste water treatment plant (WWTP) to support the dredging operations on the Portage Creek Area Site. The WWTP will receive contaminated water from four different operation-related sources:



- Water generated from dewatering the isolated excavation area and the standing/surface water in the excavation areas.
- Water generated from dewatering sediments (groundwater) within the excavation areas.
- Water generated from dewatering excavated sediments staged on the dewatering pad.
- Water generated from the truck tire wash and equipment decontamination at the excavation area and dewatering/staging/load-out pad.

EQ will lease WWTP components to construct a system suitable for removing total suspended solids (TSS) and PCBs from collected water to suitable levels for discharge back into the Kalamazoo River watershed under an SRD agreement with MDEQ. EQ will provide a system not only capable of addressing PCBs and TSS, but also capable of removing iron and manganese. EQ has included iron and manganese treatment to preserve the operating efficiency of the granular-activated carbon (GAC) filtration units. Regional working experience has taught EQ that iron and manganese concentrations in groundwater (from dewatering isolated sediments) oxidize when pumped, thus creating an iron-manganese bacteria that causes fouling of the carbon beds. Therefore, system components will be located upstream in the treatment process to remove iron and manganese prior to water contact with GAC filter beds. Details concerning system construction and operation will be provided in the Water Management Plan submittal.

Dewatering Pipeline Construction to Area SA6

EQ will construct one 10-inch HDPE pipeline from the WWTP south to excavation area SA6. EQ will need to clear and grub a 5-ft- to 6-ft-wide pathway adjacent to the creek channel to accommodate pipeline construction and subsequent inspection/monitoring/maintenance. EQ will use a brush hog mower mounted on a posi-track loader to perform the majority of the clearing. Laborers equipped with chain saws will remove trees, as needed, to ground level. Tree trunks and branches <8 inches will be processed through a wood chipper to create wood mulch, which will be stockpiled for later use as ground cover in designated areas throughout the site. Vegetation will only be removed down to the ground surface in order to protect root systems and thus maintain soil stability along the creek.

EQ will assemble an HDPE pipeline constructed from SDR 17 10-inch solid wall HDPE pipe, which will be shipped to the Site in 40-ft/50-ft stacks. EQ will use an HDPE butt-end fusion welder to assemble the pipeline approximately 2,000 feet from the WWTP at the John Street



support area to the south end of SA6 at the Stockbridge Avenue bridge. The pipeline assembly crew will preassemble 200-foot-long sections at the support area, while clearing and grubbing work along the creek is performed. EQ will then use a posi-track skid steer loader to pull the sections to their final location for final welding. An all-terrain utility vehicle will be used to move the HDPE pipe welder to the final welding/assembly location. Once the pipeline is advanced to the Lake Street bridge, a rope cable will be drawn from upstream to downstream of the bridge to allow the pipeline to be pulled beneath the bridge. EQ will cap the end of the pipeline section, secure it with the cable, and pull it under the bridge by using either the posi-track loader or a gasoline-powered winch. The pipeline will then be extended to the Stockbridge Avenue bridge. EQ will install tee's and camlock fittings at strategic locations to connect the pipeline to the isolation area dewatering pumps. EQ will drive steel posts at 100-foot intervals to anchor the pipeline in the event of flooding. A ¼-inch vinyl-coated cable will be wrapped around the pipeline and secured to the post with cable clamps to facilitate anchoring.

EQ will later remove pipeline segments, as excavation work proceeds from upstream to downstream. The ends of the removed segments will be plugged after the line is drained, and the segments will be returned to the support area for later reuse downstream.



3. SA7 CONTAMINATED SOIL REMOVAL

The SA7 excavation area is within a flood plain located in a woods west of Portage Creek southwest of the intersection of Eggleston Avenue and Reed Court. The flood plain area is bordered by Reed Avenue to the south, Stockbridge Avenue to the north, Portage Creek to the east, and railroad tracks to the west.

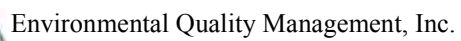
The overall surface area of the excavation is anticipated to be approximately 12,750 square feet (sf). The approximate overall dimensions are 255 feet long by 50 feet wide. EQ will excavate soils >50 mg/kg that will require TSCA disposal at a Subtitle C landfill (approximately 300 cubic yards (cy)) and non-TSCA disposal of <50 mg/kg at a Subtitle D landfill (approximately 655 cy). Although the overall excavation area is divided into five subsections (SA7-1 through SA7-5), the TSCA soil excavation areas are located within excavation areas SA7-1, SA7-2, SA7-3, and SA7-4 as depicted in Figure 5, SA7 Contaminated Soil Removal Area. Therefore, EQ will first remove the TSCA soils prior to removing the Subtitle D material. Excavating in this manner will allow the TSCA material to be segregated from the Subtitle D material. Table 1 summarizes excavation information specific to Area SA7.

Table 1. Excavation Details

Excavation Area	Dimensions	Removal Depth	Surface Area/Volume of TSCA Soils	Surface Area/Volume of Subtitle D Soils
SA7-1	50-ft wide by 50-ft long	24 inches	1340 sf/99 cy	1160 sf/86 cy
SA7-2	50-ft wide by 47-ft long	24 inches	336 sf/25 cy	2014 sf/149 cy
SA7-3	51.5-ft wide by 50-ft long	24 inches	1475 sf/109 cy	1100 sf/81 cy
SA7-4	49-ft wide by 51-ft long	24 inches	866 sf/64 cy	1633 sf/120 cy
SA7-5	37-ft wide by 80-ft long	24 inches	0 sf/0 cy	2960 sf/219 cy

Waste Characterization Sampling of TSCA/Subtitle D Soil

EQ will collect characterization soil samples of the TSCA and Subtitle D soils prior to excavation. The number of samples, collection method, and exact analyses to be performed are detailed in the FSP. Both the TSCA and Subtitle D waste soils will be analyzed for landfill





disposal parameters, which include full TCLP, reactivity, corrosivity, ignitability, paint filter, and PCB analysis.

Clearing and Grubbing of Access Road and Excavation Area

EQ will begin clearing and grubbing vegetation at an access location from Reed Avenue to facilitate access to the path and excavation area and to facilitate contaminated soil removal. EQ intends to clear and grub the area in such a manner that will protect the root mass of the plants and maintain soil stability. A brush hog mower affixed to a posi-track loader will be used to clear underbrush from the work area outlined in Figure 5 entitled SA7 Site Plan. Laborers equipped with chain saws will then fell trees along the access path route and over the surface of the excavation area. A thumb equipped excavator and a rubber-tire loader will be used for tree felling, and a dozer will assist with handling and processing of vegetation. Tree tops and tree trunks (<8-inch diameter) will be processed through a wood chipper to create wood mulch for use as ground cover at a later time. Tree trunks with >8-inch diameter will be stockpiled in a designated area for possible future use as a bridging under-base for wet/soft soil work areas. Tree trunks will generally be removed to ground elevation, but may be ground down below surface level to facilitate road construction or other needs. A stump grinder will be brought on Site if needed. EQ will process tree tops and smaller vegetation with a wood chipper to turn material into wood mulch. Wood mulch generated will be handled in one or a combination of ways that best suits the Site needs at the time of generation:

- Generated wood mulch may be provided to the City of Kalamazoo's wood and brush recycling facility.
- Generated wood mulch may be stockpiled either at the SA7 removal area or the John Street TCRA Support Area for subsequent use as a road base or temporary soil stabilization cover at SA7.

Access Road Construction

Access construction to facilitate contaminated soil removal will consist of creating a construction entrance, material transfer station, and access path to the excavation area. The construction entrance and material transfer station will be discussed in the following section because of their use as environmental controls.



EQ will construct a 15-ft-wide access path extending back from Reed Avenue to the excavation area. The path will be extended around the perimeter of the excavation area to allow crawler carriers to be loaded from the excavation area without having to enter the excavation area.

Environmental and Site Controls

EQ will install environmental and site controls concurrently with access construction activities. The controls to be installed are as follows:

Construction Entrance—The construction entrance will be a 15-ft-wide by 75-ft-long section of 2-inch to 3-inch gravel from the curb line at Reed Avenue 75 feet north to the access path. EQ will use a rubber-tire loader, excavator, and dozer for work at the construction entrance. A dozer will be used to grade the construction entrance to create a smooth level surface for construction. EQ may install an 8-ounce non-woven geotextile underlayment over the surface and cover the geotextile with 2 to 3 inches of stone to create the road surface. As necessary, rock will be spread to a thickness of approximately 8 inches and compacted in place with heavy equipment. Road rock delivery trucks will be backed in from Reed Avenue to dump their loads. EQ will use two laborers to coordinate rock delivery at the Site. The two laborers will be used as flag men to direct delivery trucks and control traffic on Reed Avenue into the site. EQ will have traffic control signs stationed east and west displaying “Trucks Entering Highway.”

Perimeter Construction Fence—EQ will install an orange construction fence at the boundary of the overall clearing and grubbing area to restrict access. Steel fence posts will be driven approximately every 10 feet and the fence fabric anchored to it with plastic zip ties. “Keep Out” and “Authorized Entry Only” signage will be affixed to the outside of the fence at approximately 50-ft intervals.

Perimeter Silt Fence—EQ will install a silt fence 1 to 2 feet inside the perimeter of the construction fence. The type of silt fence used and installation details are provided in Appendix C, Exhibit 8a of the Soil Erosion and Sedimentation Control Plan. A small trencher will excavate a 6-inch-deep trench to bury the silt fence anchor apron.



Excavation Area Isolation Fence—EQ will install an orange construction fence around the perimeter of the excavation and load-out area. The fence will be set back approximately 20 feet from the excavation area perimeter access path.

Decontamination Area—A decontamination area will be set for personnel entry/exit and decontamination. A tent, tables, chairs, trash receptacles, first-aid kit/emergency equipment, personal protective equipment (PPE), and supplies will be housed at this location. Personnel will enter the hot zone at this location while donning proper PPE, and will exit through this location to remove their PPE before entering the clean environment.

Material Transfer Station—EQ will install a material transfer station on the north end of the construction entrance to transfer contaminated soil hauled from the excavation area by crawler carriers to the over-the-road dump trucks. EQ will construct the station by installing six HDPE road mats as a base with timber mat side walls set along the outer edges. This will require the following steps for completion:

- Low limbs from trees surrounding the transfer area will be removed to allow the excavator to travel over the transfer station.
- The transfer station area will be cleared of vegetative debris, and wood debris will be processed into mulch.
- The area will be scraped to create a level construction surface.
- A total of six HDPE road mats (7-ft-wide by 14-ft-long) will be pinned together in a configuration of three mats wide by two mats long, thus creating a 21-ft-wide by 28-ft-long surface.
- Twelve (4-ft-wide by 20-ft-long) timber swamp mats will be placed on the outer edge of the HDPE road mats to create the sidewalls of the transfer station.
- Gravel ramps will be placed on the north and south sides of the pits so that the crawler carriers can dump their loads onto the transfer station and elevated work platform, and the excavator can remove soil from the pit and load it into trucks.



Example photographs of the transfer station construction and operation are presented below:



Photograph 3. Transfer Station in Operation



Photograph 4. Constructed View

Truck Tire Wash Station—EQ will provide a manually-operated truck tire wash station for cleaning truck tires after the trucks have been loaded with sediment waste. The tire wash station will be located between the transfer station/load-out area and the construction entrance. EQ does not anticipate generating a large volume of water from tire washing at this location due to the relatively small amount of soil being shipped off site. Therefore, waste wash water generated will be containerized and transferred to the John Street TCRA Support Area for subsequent disposition.

**Excavation of TSCA-Contaminated Soil**

EQ will begin contaminated soil removal in the SA7 area by first removing TSCA-contaminated soils. Surveyors will stake out the excavation area to define the boundaries of TSCA and Subtitle D contaminated soils. Setback stakes will be positioned (based on removal excavation data) outside the access pathway around the excavation area to guide excavation efforts. EQ will begin the soil removal effort with TSCA soils located in the southwest corner of SA7-4. Contaminated soil removal will progress south toward SA7-3, then SA7-2, and finally SA7-1. Soils will be removed to 24 inches below ground surface level (BGSL) in all areas of SA7. Excavated soils will either be directly loaded into crawler carriers for dumping in the transfer station, or piled close in the excavation area to allow latent water to drain from the soil (if saturated conditions are encountered). Once soils have sufficiently drained, the excavator will load the soil into the crawler carriers to be taken to the transfer station. Solidification media may be added at the excavation area or transfer station if soils require additional solidification prior to disposal off Site. EQ will add solidification media, such as Calciment ® packaged in super sacks, to the soils in a controlled fashion to minimize dust emissions.

The crawler carriers will be loaded to capacity to maximize the efficiency of the removal operations, but trucks will not be over loaded to minimize/eliminate spillage. EQ will monitor transfer activities with the crawler carriers to recover any spillage. Small spills will be hand shoveled into the bucket of a posi-track loader for transfer back to the excavation area or to the transfer station for subsequent load-out. Large spills will be recovered with the posi-track loader and handled appropriately. Plastic tarps may be used to cover spill areas if recovery cannot be completed in a timely fashion to prevent mechanical spreading of contamination by tracking of crawler carriers. These control practices will be performed for both TSCA and Subtitle D removal operations.

EQ will schedule disposal trucking concurrent with contaminated soil excavation operations. Excavated TSCA soils will be loaded into quad-axial disposal trucks as loads are dumped into the transfer station, subsequent to solidification. EQ estimates a minimum of seven truckloads will be required for shipment based on volume calculations provided in the "Portage Creek Remediation Volume and Mass Estimations" prepared by the USEPA FIELDS Group dated



April 14, 2011. EQ will tentatively schedule an additional two loads in the event soil removal and possible subsequent solidification exceeds the original estimated volume. Soil removal and shipment is expected to be completed in one work day. EQ will make arrangements to complete and copy manifest documentation at the SA7 removal area prior to dispatching loads to the disposal facility. Details concerning truck transport routes are provided in the Portage Creek Area Traffic Control Plan dated September 2011. Trucks will be loaded by an excavator, and the load covered with a truck tarp. The loaded truck will travel to the tire wash station, then exit SA7 and proceed to the disposal facility.

Excavation of Subtitle D Contaminated Soil

EQ will continue contaminated soil removal in the SA7 area after removing TSCA-contaminated soils from the area. EQ will continue excavations with Subtitle D soils located at the northern end of SA7-5. Contaminated soil removal will progress south from SA7-5 toward SA7-1. Soil will be removed to 24 inches BGSL in all areas of SA7. Excavated soils will either be directly loaded into crawler carriers for dumping in the transfer station, or piled in the excavation area to allow latent water to drain back into the excavation area (if saturated conditions are encountered). Once soils have sufficiently drained, they will be loaded into the crawler carriers by the excavator and taken to the transfer station. Solidification media will be added at the excavation area or transfer station. EQ will add solidification media, such as Calciment ® packaged in super sacks, to the soil under controlled conditions to minimize dust emissions.

EQ will schedule disposal trucking concurrent with contaminated soil excavation operations. Excavated Subtitle D soils will be loaded into quad-axial disposal trucks as loads are dumped into the transfer station, subsequent to solidification. EQ estimates that a minimum of 35 truckloads will be required for shipment based on volume calculations provided in the “Portage Creek Remediation Volume and Mass Estimations” prepared by the USEPA FIELDS Group dated April 14, 2011.

If determined necessary by the USEPA On-Scene Coordinator (OSC), EQ will scrape up approximately 3 to 6 inches of soil along the access pathway to recover contaminated soil that spilled during transfer, in addition to removing contaminated soil from the targeted SA7 removal area. This material will be disposed of as Subtitle D waste.



EQ will tentatively schedule additional loads as needed, in the event soil removal and possible subsequent solidification exceeds the original estimated volume. Soil removal and shipment is expected to be completed in 3 to 4 workdays. EQ will make arrangements to complete and copy the manifest documents at the SA7 removal area prior to dispatching loads to the disposal facility. Details concerning truck transport routes are provided in the Portage Creek Area Traffic Control Plan dated September 2011. Trucks will be loaded by an excavator, and the loads covered with truck tarps. The loaded truck will advance to the tire wash station, and then exit SA7 to travel to the disposal facility.

T&D of TSCA-Contaminated Soil

EQ will procure bids for the disposal of TSCA-contaminated soil through a competitive bid process. EQ will prepare a disposal profile for the selected disposal facility, and obtain the generator's signature from the USEPA OSC. EQ will submit signed disposal profile and waste characterization analytical data to the disposal facility. EQ will then coordinate with the disposal facility to transport waste materials directly from the SA7 removal site as described in the previous two sections. Disposal transport trucks will travel to SA7/Reed Avenue for loading. Truckers will be instructed to remove their tarps and install plastic bed liners into their dump boxes. Trucks will then be directed to back off Reed Avenue up to the transfer station, where they will be loaded by an excavator. Once loaded, tarp covers will be put back in place, the hazardous waste shipping manifest completed, and the truck will proceed to the tire wash station. Trucks will travel to the disposal destination following the traffic route prescribed in the Traffic Control Plan.

T&D of Subtitle D Contaminated Soil

EQ will procure bids for the disposal of Subtitle D contaminated soil through a competitive bid process. EQ will prepare a disposal profile for the selected disposal facility, and obtain the generator's signature from the USEPA OSC. EQ will submit the signed disposal profile and waste characterization analytical data to the disposal facility. EQ will then coordinate with the disposal facility to transport waste materials directly from the SA7 removal site as described in the previous two sections. Disposal transport trucks will travel to SA7/Reed Avenue for loading.



Truckers will be instructed to remove their tarps and install plastic bed liners into their dump boxes. Trucks will then be directed to the staging pad, where they will be loaded by an excavator or rubber-tire loader. Once loaded, tarp covers will be put back in place, the non-hazardous waste shipping manifest and/or “bill of lading” will be completed, and the truck will proceed to the tire wash station. Trucks will travel to the disposal destination following the traffic route prescribed in the Traffic Control Plan.

Post-Excavation Sampling

EQ will support the START contractor in post-excavation sampling of the contaminated soil removal area. EQ will provide laboratory analyses through a competitively procured laboratory. Sampling and analyses will be performed in accordance with the QAPP and FSP prepared for the site. Sampling locations will be staked in order to document the locations during post-excavation survey operations. Sample analysis turnaround time will be determined at/or near the time of collection, subject to time constraints with other site operations. If cleanup objectives of <10 ppm are met in all contaminated soil removal areas, work will proceed to close out the excavation. If a portion of an area, and/or all areas, fail to meet cleanup objectives, an additional 6 inches (with a 6-inch over-excavation allowance) will be excavated and failing areas will be re-sampled. Before excavation close-out activities are conducted, the sampling and excavation process will be repeated as needed until the entire excavation area meets cleanup objectives or other direction is provided by the OSC.

Post-Excavation Survey

EQ will coordinate with the USEPA OSC and USEPA FIELDS Group to survey the SA7 excavation area subsequent to successful removal of contaminated soil to meet cleanup objectives. The USEPA FIELDS Group will conduct a post-excavation survey to document the removal depths required to meet cleanup objectives. The USEPA FIELDS Group will provide survey data to EQ for generation of “As Built” drawings and make “Cut-to-Fill” calculations to determine the volume of contaminated soil removed.

**Backfill of Contaminated Soil Removal Area**

EQ will decontaminate site excavation equipment/transfer station prior to beginning backfill operations. EQ will provide sand/gravel fill material from a yet-to-be-determined local borrow source. Backfill source materials will be analytically tested, prior to Site delivery, in accordance with the FSP/ QAPP/ CQCP. Material will be delivered to the Site in end dumps following Traffic Control Plan and procedures described in the above Access Road Construction Section. Trucks will enter the Site and dump backfill materials in the transfer station, and crawler carriers will be loaded to take backfill to the south end of the excavation area. An excavator and dozer will disperse backfill material in 12-inch lifts, and backfill will be placed along the access pathway to restore it to its pre-existing grade. Excavation equipment will be used to compact the material.

Topsoil will be placed in a 6-inch organic-rich cover layer over the backfill material. This material source will be tested in accordance with the FSP/QAPP/CQCP prior to delivery to the Site. Material will be delivered to the Site in end dumps following the Traffic Control Plan and procedures described in the above Access Road Construction Section. Trucks will enter the Site and dump backfill materials at the transfer station, and crawler carriers will be loaded to take the material to the south end of the excavation area. An excavator and dozer will disperse topsoil material in 6-inch lifts.

Removal of Site Facilities/Controls

EQ will remove the site infrastructure that was installed to facilitate contaminated soil removal and backfill operations. EQ will remove perimeter fencing, decontamination facilities, and the construction entrance. EQ will leave erosion control features such as the silt fence in place and monitor and maintain those features until final re-vegetation has been re-established and accepted by USEPA.

Re-Vegetation Planting

Based on the fall 2011 construction schedule for SA7, EQ anticipates that final restorative planting will not be completed until spring/early summer 2012. Therefore, EQ will perform temporary seeding with a winter rye grass mixture to provide a cover crop to stabilize the



disturbed areas until final restorative planting can take place. EQ will provide a straw mulch cover over temporary seeding to stabilize the soil while the cover crop is getting established. EQ will competitively procure a specialty subcontractor to provide native and selected plant species to restore this flood plain environment. Restoration planting requirements will be addressed in a forthcoming work plan for the Portage Creek Project.

Re-Vegetation Monitoring

EQ will monitor the progress of re-vegetation for a period of 1 year from final restoration planting and/or until re-vegetation acceptance by USEPA. During this period, EQ will arrange for replanting as needed. Monitoring and maintenance activities will be performed in conjunction with monitoring and maintenance of site erosion controls. EQ will use an inspection log to document monitoring observations, corrective action requirements, and work completion.

Removal of Environmental Controls

Upon acceptance of re-vegetation, EQ will remove erosion controls installed in the SA7 Area.